APPENDIX A ♦ FARS DATA ELEMENTS

1996 Fatality Analysis Reporting System Data Elements

Crash Level

Crash Date
Atmospheric Condition
City
Construction/Maintenance Zone
County
Day of Week
Emergency Medical Services (EMS) Notification Time
EMS Arrival Time at Hospital
EMS Arrival Time at Scene
First Harmful Event
Hit and Run
Light Condition
Manner of Collision
Milepoint
National Highway System
Number of Drinking Drivers in Crash
Number of Fatalities in Crash
Number of Nonmotorist Forms Submitted
Number of Person Forms Submitted
Number of Travel Lanes
Number of Vehicle Forms Submitted
Rail Grade Crossing Identifier
Related Factors—Crash Level
Relation to Junction
Relation to Roadway
Roadway Alignment
Roadway Function Class
Roadway Profile
Roadway Surface Condition
Roadway Surface Type
Route Signing
School Bus Related
Special Jurisdiction
Speed Limit
State
Time
Traffic Control Device
Traffic Control Device Functioning
Trafficway Flow
Trafficway Identifier

Vehicle Level

Body Type
Cargo Body Type
Crash Avoidance Maneuver
Emergency Use
Extent of Deformation
Fire Occurrence
Truck Gross Vehicle Weight Rating
Hazardous Cargo
Impact Point—Initial
Impact Point—Principal
Jackknife
Manner of Leaving Scene
Most Harmful Event
Motorcycle Displacement
Number of Axles
Number of Deaths in Vehicle
Number of Occupants in Vehicle
Number of Vehicle Forms Submitted
Passenger Car Weight
Passenger Car Wheelbase
Registered Vehicle Owner
Registration State
Related Factors—Vehicle Level
Rollover

Vehicle Level (Continued)

Special Use
State Information
Travel Speed
Truck Fuel Type
Underride/Override
Vehicle Configuration
Vehicle Identification Number
Vehicle Make
Vehicle Maneuver
Vehicle Model
Vehicle Model Year
Vehicle Number
Vehicle Role
Vehicle Trailering

Driver Level

Commercial Motor Vehicle License Status
Compliance with License Endorsements
Compliance with License Restrictions
Date of First and Last Crash, Suspension, Conviction
Driver Drinking
Driver Level Counters
Driver License Status
Driver License Type Compliance
Driver Presence
Driver Zip Code
License State
Non-CDL License Status
Related Factors—Driver Level
Violations Charged

Person Level

Age
Air Bag Availability/Function
Alcohol Test Results
Death Certificate Number
Death Date
Death Time
Drug Test Results
Drug Test Type
Ejection
Ejection Path
Extrication
Fatal Injury at Work
Injury Severity
Method of Alcohol Determination
Method of Other Drug Determination by Police
Nonmotorist Location
Nonmotorist Striking Vehicle Number
Person Number
Person Type
Police-Reported Alcohol Involvement
Police-Reported Other Drug Involvement
Related Factors—Person Level
Restraint System Use
Seating Position
Sex
Taken to Hospital or Treatment Facility
Time of Crash to Time of Death
Vehicle Number

APPENDIX B ♦ GES DATA ELEMENTS

1996 General Estimates System Data Elements

Crash Level

Alcohol Involved in Crash
Atmospheric Condition
Day of Week
First Harmful Event
Hour of Crash
Interstate Highway
Land Use
Light Condition
Manner of Collision
Maximum Injury Severity
Minute of Crash
Month of Crash
National Highway System Roadway
Number Injured in Crash
Number of Nonmotorists
Number of Travel Lanes
Number of Vehicles
Pedestrian/Pedalcyclist Crash Type
Percent Rural
Region of Country
Relation to Junction
Relation to Roadway
Roadway Alignment
Roadway Profile
Roadway Surface Condition
School Bus Related
Speed Limit
Traffic Control Device
Trafficway Flow
Work Zone
Year of Crash

Vehicle/Driver Level

Crash Type
Body Type
Cargo Body Type
Carrier's Identification Number
Corrective Action Attempted
Critical Event
Damage Areas
Damage Severity
Driver Distracted By
Driver Drinking in Vehicle
Driver Maneuvered To Avoid
Driver Presence
Driver's Vision Obscured By
Driver's Zip Code
Emergency Use
Fire Occurrence
Hazardous Materials Placard Number
Hazardous Materials Placarded
Hazardous Materials Release
Hit and Run
Initial Point of Impact
Jackknife
Manner of Leaving Scene
Maximum Injury Severity in Vehicle
Model Year
Most Harmful Event
Movement Prior to Critical Event
Number Injured in Vehicle
Number of Axles, Including Trailer
Number of Occupants
Precrash Location
Precrash Vehicle Control
Rollover Type
Special Use

Vehicle/Driver Level (Continued)

Travel Speed
Vehicle Contributing Factors
Vehicle Identification Number
Vehicle Make
Vehicle Model
Vehicle Number
Vehicle Role
Vehicle Trailing
Violations Charged

Person Level

Age
Air Bag Availability/Function
Ejection
Injury Severity
Nonmotorist Action
Nonmotorist Location
Nonmotorist Safety Equipment Use
Nonmotorist Striking Vehicle Number
Person Number
Person Type
Person's Physical Impairment
Police-Reported Alcohol Involvement
Police-Reported Drug Involvement
Restraint System Use
Restraint Type
Seating Position
Sex
Taken to Hospital or Treatment Facility
Vehicle Number

APPENDIX C ♦ TECHNICAL NOTE

GES Technical Note

Standard Errors

The national estimates produced from GES data may differ from the true values, because they are based on a probability sample of crashes and not a census of all crashes. The size of these differences may vary depending on which sample of crashes was selected. [For a complete description of the GES sampling design, see *National Accident Sampling System General Estimates System Technical Note* (DOT HS 807 796) available from NCSA.] The standard error of an estimate is a measure of the precision or reliability with which an estimate from this particular GES sample approximates the results of a census.

In a report of this size, it is impractical to provide standard errors for each estimate. Instead, generalized standard errors for estimates of totals are provided in the following table. Generalized errors were calculated separately for the crash, vehicle, and people characteristics. The values for the GES estimates and an estimate of one standard error are given in the following table. By adding and subtracting two standard errors, a 95 percent confidence interval can be created for the GES estimates in this report. For example, the estimated number of injury crashes that occurred in the month of February is given in Table 23 as 171,000. To calculate one standard error for this crash estimate, use the table on the following page. Since 171,000 does not appear in the Crash Estimate column, use linear interpolation from the standard error values for 100,000 (8,500) and 200,000 (15,000). One approximate standard error would be 13,100. The 95 percent confidence interval for this estimate would be 171,000 ± 2 × 13,100 or 145,000 to 197,000.

1996 GES Estimates and Standard Errors

Crash Estimate (x)	Crash Standard Error (SE)*	Vehicle Estimate (x)	Vehicle Standard Error (SE)**	Person Estimate (x)	Person Standard Error (SE)***
1,000	500	1,000	400	1,000	400
5,000	1,100	5,000	1,000	5,000	1,000
6,000	1,200	10,000	1,600	10,000	1,500
7,000	1,300	20,000	2,500	20,000	2,300
8,000	1,500	30,000	3,300	30,000	3,100
9,000	1,600	40,000	4,100	40,000	3,800
10,000	1,700	50,000	4,900	50,000	4,400
20,000	2,600	60,000	5,600	60,000	5,100
30,000	3,500	70,000	6,300	70,000	5,700
40,000	4,300	80,000	7,000	80,000	6,300
50,000	5,000	90,000	7,700	90,000	6,900
60,000	5,800	100,000	8,400	100,000	7,500
70,000	6,500	200,000	14,900	200,000	13,100
80,000	7,200	300,000	21,300	300,000	18,500
90,000	7,900	400,000	27,500	400,000	23,700
100,000	8,500	500,000	33,800	500,000	28,900
200,000	15,000	600,000	40,000	600,000	34,100
300,000	21,100	700,000	46,200	700,000	39,200
400,000	27,100	800,000	52,500	800,000	44,300
500,000	33,100	900,000	58,800	900,000	49,400
600,000	39,000	1,000,000	65,100	1,000,000	54,600
700,000	44,900	2,000,000	129,800	2,000,000	106,400
800,000	50,800	3,000,000	197,400	3,000,000	159,600
900,000	56,700	4,000,000	267,600	4,000,000	214,300
1,000,000	62,700	5,000,000	340,300	5,000,000	270,300
2,000,000	122,600	6,000,000	415,200	6,000,000	327,700
3,000,000	184,300	7,000,000	492,100	7,000,000	386,200
4,000,000	247,800	8,000,000	570,900	8,000,000	445,900
5,000,000	313,000	9,000,000	651,500	9,000,000	506,700
6,000,000	379,800	10,000,000	733,900	10,000,000	568,500
6,500,000	413,700	11,000,000	817,800	11,000,000	631,300
7,000,000	448,000	12,000,000	903,300	12,000,000	695,100

$^{*}SE = e^{a+b(\ln x)^2}$, *where* $a = 4.521508$ $b = 0.034180$	$^{**}SE = e^{a+b(\ln x)^2}$, *where* $a = 4.374631$ $b = 0.035149$	$^{***}SE = e^{a+b(\ln x)^2}$, *where* $a = 4.417590$ $b = 0.034001$

Unknowns

GES data are obtained either directly from an item on the PAR or by interpreting the information provided in the report through reviewing the crash diagram, the Officer's written summary of the crash, or combinations of variables on the PAR. Because of this interpretation, and because the police officer may not have entered some item of information or provide complete information, data can be missing. Two different statistical procedures are used on GES data to complete values for unknown data. These procedures, univariate and hotdeck imputation, are described in a technical report available from NCSA, *Imputation in the General Estimates System* (DOT HS 807 985). The table below gives the reader the proportion of unknown values prior to imputation for variables with imputed values that were used in this report.

Percent of Unknowns for 1996 GES Data Elements

Crash Level			
Alcohol Involved in Crash	3.0 %	Manner of Collision	0.1 %
Atmospheric Condition	1.5 %	Minute of Crash	0.7 %
Crash Severity	4.9 %	Relation to Junction	0.0 %
Day of Week	0.0 %	Relation to Roadway	<0.1 %
First Harmful Event	0.1 %	Roadway Surface Condition	1.5 %
Hour of Crash	0.7 %	Speed Limit	17.5 %
Light Condition	1.7 %	Traffic Control Device	0.8 %
Vehicle/Driver Level			
Driver Drinking in Vehicle	5.3 %	Rollover Type	0.0 %
Initial Point of Impact	2.8 %	Vehicle Type	1.7 %
Most Harmful Event	3.3 %		
Person Level			
Age	11.5 %	Seating Position	4.6 %
Injury Severity	3.9 %	Sex	8.9 %
Police-Reported Alcohol Involvement	3.7 %		

GLOSSARY

Alcohol Involvement

NHTSA defines a fatal crash as alcohol-related or alcohol-involved if either a driver or a nonmotorist (usually a pedestrian) had a measurable or estimated blood alcohol concentration (BAC) of 0.01 grams per deciliter (g/dl) or above.

NHTSA defines a nonfatal crash as alcohol-related or alcohol-involved if police indicate on the police accident report that there is evidence of alcohol present. The code does *not* necessarily mean that a driver, passenger, or nonoccupant was tested for alcohol.

Blood Alcohol Concentration

The BAC is measured as a percentage by weight of alcohol in the blood (grams/deciliter). A positive BAC level (0.01 g/dl and higher) indicates that alcohol was consumed by the person tested. A BAC level of 0.10 g/dl or more indicates that the person was intoxicated.

Body Type

Detailed type of motor vehicle within a vehicle type.

Bus

Large motor vehicles used to carry more than ten passengers, including school buses, inter-city buses, and transit buses.

Combination Truck

A truck tractor not pulling a trailer; a tractor pulling at least one full or semi-trailer; or a single-unit truck pulling at least one trailer.

Construction/Maintenance Zone

An area, usually marked by signs, barricades, or other devices indicating that highway construction or highway maintenance activities are ongoing.

Crash

An event that produces injury and/or property damage, involves a motor vehicle in transport, and occurs on a trafficway or while the vehicle is still in motion after running off the trafficway.

Crash Severity

1. *Fatal Crash*. A police-reported crash involving a motor vehicle in transport on a trafficway in which at least one person dies within 30 days of the crash.
2. *Injury Crash*. A police-reported crash that involves a motor vehicle in transport on a trafficway in which no one died but at least one person was reported to have: (1) an incapacitating injury; (2) a visible but not incapacitating injury; (3) a possible, not visible injury; or (4) an injury of unknown severity.
3. *Property-Damage-Only Crash*. A police-reported crash involving a motor vehicle in transport on a trafficway in which no one involved in the crash suffered any injuries.

Crash Type
Single-vehicle or multiple-vehicle crash.

Day
From 6 a.m. to 5:59 p.m.

Driver
An occupant of a vehicle who is in physical control of a motor vehicle in transport, or for an out-of-control vehicle, an occupant who was in control until control was lost.

Ejection
Refers to occupants being totally or partially thrown from the vehicle as a result of an impact or rollover.

First Harmful Event
The first event during a crash that caused injury or property damage.

Fixed Object
Stationary structures or substantial vegetation attached to the terrain.

Gross Vehicle Weight Rating (GVWR)
The maximum rated capacity of a vehicle, including the weight of the base vehicle, all added equipment, driver and passengers, and all cargo loaded into or on the vehicle. Actual weight may be less than or greater than GVWR.

Initial Impact Point
The first impact point that produced personal injury or property damage, regardless of First or Most Harmful Event.

Injury Severity
The police-reported injury severity of the person (i.e., occupant, pedestrian, or pedalcyclist).

1. Killed (Fatal)
2. Injured (Incapacitating injury, evident injury but not incapacitating, complaint of injury, or injured, severity unknown).
3. No injury.

Jackknife
Jackknife can occur at any time during the crash sequence. In this report, jackknifing is restricted to truck tractors pulling a trailing unit in which the trailing unit and the pulling vehicle rotate with respect to each other.

Junction
Area formed by the connection of two roadways, including intersections, interchange areas, and entrance/exit ramps.

Land Use
The crash location (urban or rural).

Large Trucks
Trucks over 10,000 pounds gross vehicle weight rating, including single unit trucks and truck tractors.

Light Trucks
Trucks of 10,000 pounds gross vehicle weight rating or less, including pickups, vans, truck-based station wagons, and utility vehicles.

Manner of Collision
A classification for crashes in which the first harmful event was a collision between two motor vehicles in transport and is described as one of the following:

Angle. Collisions which are not head-on, rear-end, rear-to-rear, or sideswipe.

Head-on. Refers to a collision where the front end of one vehicle collides with the front-end of another vehicle while the two vehicles are traveling in opposite directions.

Rear-end. A collision in which one vehicle collides with the rear of another vehicle.

Sideswipe. A collision in which the sides of both vehicles sustain minimal engagements.

Most Harmful Event
The event during a crash for a particular vehicle that is judged to have produced the greatest personal injury or property damage.

Motorcycle
A two- or three-wheeled motor vehicle designed to transport one or two people, including motorscooters, minibikes, and mopeds.

Motor Vehicle in Transport
A motor vehicle in motion on the trafficway or any other motor vehicle on the roadway, including stalled, disabled, or abandoned vehicles.

Night
From 6 p.m. to 5:59 a.m.

Noncollision
A class of crash in which the first harmful event does not involve a collision with a fixed object, nonfixed object, or a motor vehicle. This includes overturn, fire/explosion, falls from a vehicle, and injuries in a vehicle.

Nonmotorist

Any person who is not an occupant of a motor vehicle in transport and includes the following:

1. Pedestrians
2. Pedalcyclists
3. Occupants of parked motor vehicles
4. Others such as joggers, skateboard riders, people riding on animals, and persons riding in animal-drawn conveyances.

Nonmotorist Location

The location of nonmotorists at time of impact. Intersection locations are coded only if nonmotorists were struck in the area formed by a junction of two or more trafficways. Non-intersection location may include nonmotorists struck on a junction of a driveway/alley access and a named trafficway. Nonmotorists who are occupants of motor vehicles not in transport are coded with respect to the location of the vehicle.

Objects Not Fixed

Objects that are movable or moving but are not motor vehicles. Includes pedestrians, pedalcyclists, animals, or trains (e.g., spilled cargo in roadway).

Occupant

Any person who is in or upon a motor vehicle in transport. Includes the driver, passengers, and persons riding on the exterior of a motor vehicle.

Other Vehicle

Consists of the following types of vehicles:

1. Large limousine (more than four side doors or stretched chassis)
2. Three-wheel automobile or automobile derivative
3. Van-based motorhome
4. Light-truck-based motorhome (chassis mounted)
5. Large-truck-based motorhome
6. ATV (all terrain vehicle, including dune/swamp buggy) and ATC (all terrain cycle)
7. Snowmobile
8. Farm equipment other than trucks
9. Construction equipment other than trucks (includes graders)
10. Other type vehicle (includes go-cart, fork lift, city streetsweeper).

Passenger

Any occupant of a motor vehicle who is not a driver.

Passenger Car

Motor vehicles used primarily for carrying passengers, including convertibles, sedans, and station wagons.

Pedalcyclist
A person on a vehicle that is powered solely by pedals.

Pedestrian
Any person not in or upon a motor vehicle or other vehicle.

Restraint Use
The occupant's use of available vehicle restraints including lap belt, shoulder belt, or automatic belt.

Roadway
That part of a trafficway designed, improved, and ordinarily used for motor vehicle travel.

Roadway Function Class
The classification describing the character of service the street or highway is intended to provide. Includes the following:

Interstates. Limited access divided facilities of at least four lanes designated by the Federal Highway Administration as part of the Interstate System.

Other Freeways and Expressways. All urban principal arterial with limited control of access not on the Interstate system.

Other Principal Arterials. Major streets or highways, many with multi-lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.

Minor Arterials. Streets and highways linking cities and larger towns in rural areas in distributing trips to small geographic areas in urban areas (not penetrating identifiable neighborhoods).

Collectors. In rural areas, routes serving intra-county, rather than statewide travel. In urban areas, streets providing direct access to neighborhoods as well as direct access to arterials.

Local Streets and Roads. Streets whose primary purpose is feeding higher order systems, providing direct access with little or no through traffic.

Rollover
Rollover is defined as any vehicle rotation of 90 degrees or more about any true longitudinal or lateral axis. Includes rollovers occurring as a first harmful event or subsequent event.

Seating Position
The location of the occupants in the vehicle. More than one can be assigned the same seat position; however, this is allowed only when a person is sitting on someone's lap.

School Bus-Related Crash
Any crash in which a vehicle, regardless of body design, used as a school bus is directly or indirectly involved, such as a crash involving school children alighting from a vehicle.

Single-Unit Truck
A medium or heavy truck in which the engine, cab, drive train, and cargo area are all on one chassis.

Trafficway
Any road, street, or highway open to the public as a matter of right or custom for moving persons or property from one place to another.

Vehicle
See *Motor Vehicle in Transport*.

Vehicle Type
A series of motor vehicle body types that have been grouped together because of their design similarities. The principal vehicle types used in this report are passenger car, light truck, large truck, motorcycle, bus, and other vehicle. See the definition of each of the vehicle types elsewhere in this glossary.

Weekday
From 6 a.m. Monday to 5:59 p.m. Friday.

Weekend
From 6 p.m. Friday to 5:59 a.m. Monday.

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